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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,173	04/19/2004	Robert Frederick Benson	1372.151.PRC	3172
21901	7590	07/24/2007	EXAMINER	
SMITH HOPEN, PA 180 PINE AVENUE NORTH OLDSMAR, FL 34677			YUAN, DAH WEI D	
			ART UNIT	PAPER NUMBER
			1745	
			MAIL DATE	DELIVERY MODE
			07/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/709,173

**Applicant(s)**

BENSON ET AL.

**Examiner**

Dah-Wei D. Yuan

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 39-42 is/are pending in the application.
- 4a) Of the above claim(s) 18-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7-17 and 39-42 is/are rejected.
- 7) ☒ Claim(s) 4 and 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 07302004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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**ALUMINUM GALVANIC CELL**

Examiner: Yuan

S.N. 10/709,173

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JULY 19, 2007

***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-17,39-42, in Paper filed July 5, 2007 is acknowledged. Accordingly, claims 18-38 are withdrawn from consideration.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1,3,5,10,16,41,42 are rejected under 35 U.S.C. 102(e) as being anticipated by Narang et al. (US 6,991,876 B2).

With respect to claims 1,41, Narang et al. teach an electrochemical cell comprising an aluminum anode, a cathode comprising lithium peroxide (or sodium peroxide) and a separator (an electrically insulating barrier). See Column 6, Lines 4-12, Column 8, Lines 1-8, claim 1.

With respect to claim 3, Narang et al. teach the cathode further comprising a nickel electrode. See Examples.

With respect to claim 5, Narang et al. teach the use of sodium peroxide particulate. See Examples.

With respect to claim 10, Narang et al. teach the use of a glass woven separator between the anode and the cathode. See Examples.

With respect to claims 16,42, Narang et al. do not specifically disclose the surface area of the cathode and surface area of the anode are substantially stoichiometrically matched. However, it is the position of the examiner that such properties are inherent, given that both Narang et al. and the present application utilize the same electrodes in the electrochemical cell. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999).

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 17,39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Narang et al. (US 6,991,876 B2) as applied to claims 1,3,5,10,16,41,42 above.

The disclosure of Narang et al. differs from Applicant's claims in that Narang et al. do not specifically disclose the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode. Nevertheless, it is well known in that art that the optimal ratio is dependent upon physical configuration of the galvanic cell and the chemical reactions present. Therefore, it would have been within the skill of the ordinary artisan to adjust the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode in accordance to the configuration of the electrochemical and the kinetic of the reaction. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art. In re Boesch*, CCPA 1980, 617 F.2d 272, 205 USPQ215.

6. Claims 1,2,7-9,11-15,40,41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh et al. (US 5,445,905) in view of Momyer (US 4,001,043).

With respect to claims 1,2,40,41, Marsh et al. teach an electrochemical cell comprising an anode of aluminum (12), a catholyte of hydrogen peroxide (18) and a spacer (30). See Figure 1, Column 2, Lines 20-54, example 1.

However, Marsh et al. do not teach the use of an alkali metal peroxide cathode. Momyer teach a metal-water electrochemical cell comprising a lithium anode, a silver cathode and lithium hydroxide electrolyte in which the anode and the cathode are immersed. Momyer further discloses an anode moderator consisting of soluble peroxide ions, including hydrogen peroxide, sodium peroxide, sodium super oxide, lithium peroxide, potassium peroxide and potassium super oxide. See claims 1,2, Column 4, Lines 59-68. Hydrogen peroxide, lithium peroxide and

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potassium peroxide are considered functionally equivalent soluble peroxide ions. Therefore, it would have been obvious to one of ordinary skill in the art to substitute lithium peroxide (or potassium peroxide) for the hydrogen peroxide in the electrochemical cell disclosed by Marsh.

With respect to claim 7, Marsh et al. teach the aluminum with a purity of at least about 99.99%. See Column 3, Lines 44-46.

With respect to claim 8, Marsh et al. teach the addition of potassium chloride. See Column 3, Lines 54-68.

With respect to claim 9, Marsh et al. teach the use of potassium chloride or potassium hydroxide as the electrolyte solution. See Column 3, Lines 54-68.

With respect to claims 11-14, Marsh et al. teach the addition of water and hydrogen peroxide salt to the catholyte. See Column 3, Lines 54-68.

With respect to claim 15, Marsh et al. teach the addition of potassium chloride to increase the conductivity of the solution.

***Allowable Subject Matter***

7. Claims 4,6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 4 would be allowable because the prior art does not disclose or suggest the sodium peroxide is enclosed in fiberglass cloth and is positioned such that upon dissolution, the sodium peroxide passes through the metal electrode. Claim 6 would be allowable because the prior art does not disclose or suggest the metal electrode employed in the cathode is woven silver plated copper wire.

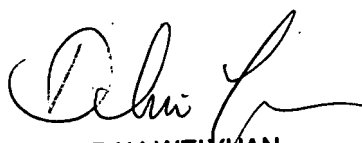
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan  
July 19, 2007



DAH-WEI YUAN  
PRIMARY EXAMINER